CLAIMS

1. A method, comprising

a) providing i) tRNA, ii) a non-radioactive marker, and iii) a translation system;

b) aminoacylating said tRNA with said marker to create a misaminoacylated tRNA;

c) introducing said misaminoacylated tRNA to said translation system under conditions such that said marker is incorporated into a nascent protein; and

d) binding said nascent protein to a surface.

2. The method of Claim 1, wherein the nascent protein is selected from recombinant gene products, gene fusion products, enzymes, cytokines, carbohydrate and lipid binding proteins, nucleic acid binding proteins, hormones, immunogenic proteins, human proteins, viral proteins, bacterial proteins, parasitic proteins and fragments and combinations thereof.

3. The method of Claim 1, wherein said translation system comprises a cellular or cell-free translation system.

4. The method of Claim 3, wherein the cellular translation system is selected from the group consisting of tissue culture cells, primary cells, cells *in vivo*, isolated immortalized cells, human cells and combinations thereof.

5. The method of Claim 3, wherein the cell-free translation system is selected from the group consisting of *Escherichia coli* lysates, wheat germ extracts, insect cell lysates, rabbit reticulocyte lysates, frog oocyte lysates, dog pancreatic lysates, human cell lysates, mixtures of purified or semi-purified translation factors and combinations thereof.

6. The method of Claim 1, wherein said surface is selected from the group consisting of a tissue culture plate surface, microtiter plate surface, surface of a bead, glass surface and polymer surface.

7. The method of Claim 3, wherein the cell-free translation system is a continuous flow or dialysis system.

8. The method of Claim 1, wherein the tRNA molecule is aminoacylated by chemical or enzymatic misaminoacylation.

9. The method of Claim 1, wherein two or more different misaminoacylated tRNAs are introduced into the translation system.

10. The method of Claim 1, wherein said nascent protein is functionally active.

11. The method of Claim 1, wherein said tRNA molecule is an initiator tRNA molecule.

12. The method of Claim 1, wherein said tRNA molecule is a suppressor tRNA molecule.

13. A method, comprising

a) providing i) tRNA, ii) a non-radioactive marker, and iii) a translation system;

b) aminoacylating said tRNA with said marker to create a misaminoacylated tRNA;

c) introducing said misaminoacylated tRNA to said translation system under conditions such that said marker is incorporated into a nascent protein;

d) binding said nascent protein to a surface to create a bound nascent protein; and

e) detecting said bound nascent protein.

14. The method of Claim 13, wherein the nascent protein detected is selected from recombinant gene products, gene fusion products, enzymes, cytokines, carbohydrate and lipid binding proteins, nucleic acid binding proteins, hormones, immunogenic proteins, human proteins, viral proteins, bacterial proteins, parasitic proteins and fragments and combinations thereof.

15. The method of Claim 13, wherein said translation system comprises a cellular or cell-free translation system.

16. The method of Claim 15, wherein the cellular translation system is selected from the group consisting of tissue culture cells, primary cells, cells *in vivo*, isolated immortalized cells, human cells and combinations thereof.

17. The method of Claim 15, wherein the cell-free translation system is selected from the group consisting of *Escherichia coli* lysates, wheat germ extracts, insect cell lysates, rabbit reticulocyte lysates, frog oocyte lysates, dog pancreatic lysates, human cell lysates, mixtures of purified or semi-purified translation factors and combinations thereof.

18. The method of Claim 13, wherein said surface is selected from the group consisting of a tissue culture plate surface, microtiter plate surface, surface of a bead, glass surface and polymer surface.

19. The method of Claim 15, wherein the cell-free translation system is a continuous flow or dialysis system.

20. The method of Claim 13, wherein the tRNA molecule is aminoacylated by chemical or enzymatic misaminoacylation.

21. The method of Claim 13, wherein two or more different misaminoacylated tRNAs are introduced into the translation system.

22. The method of Claim 13, wherein said nascent protein detected is functionally active.

23. The method of Claim 13, wherein said tRNA molecule is an initiator tRNA molecule.

24. The method of Claim 13, wherein said tRNA molecule is a suppressor tRNA molecule.

25. A method, comprising

a) providing i) tRNA, ii) a fluorescent marker, and iii) a translation system;

b) aminoacylating said tRNA with said marker to create a misaminoacylated tRNA;

c) introducing said misaminoacylated tRNA to said translation system under conditions such that said marker is incorporated so as to create a fluorescent nascent protein;

d) binding said fluorescent nascent protein to a surface to create a bound, fluorescent nascent protein; and

e) detecting said bound, fluorescent nascent protein.

26. The method of Claim 25, wherein the nascent protein detected is selected from recombinant gene products, gene fusion products, enzymes, cytokines, carbohydrate and lipid binding proteins, nucleic acid binding proteins, hormones, immunogenic proteins, human proteins, viral proteins, bacterial proteins, parasitic proteins and fragments and combinations thereof.

27. The method of Claim 25, wherein said translation system comprises a cellular or cell-free translation system.

28. The method of Claim 27, wherein the cellular translation system is selected from the group consisting of tissue culture cells, primary cells, cells *in vivo*, isolated immortalized cells, human cells and combinations thereof.

29. The method of Claim 27, wherein the cell-free translation system is selected from the group consisting of *Escherichia coli* lysates, wheat germ extracts, insect cell lysates, rabbit reticulocyte lysates, frog oocyte lysates, dog pancreatic lysates, human cell lysates, mixtures of purified or semi-purified translation factors and combinations thereof.

30. The method of Claim 25, wherein said surface is selected from the group consisting of a tissue culture plate surface, microtiter plate surface, surface of a bead, glass surface and polymer surface.

31. The method of Claim 27, wherein the cell-free translation system is a continuous flow or dialysis system.

32. The method of Claim 25, wherein the tRNA molecule is aminoacylated by chemical or enzymatic misaminoacylation.

33. The method of Claim 25, wherein two or more different misaminoacylated tRNAs are introduced into the translation system.

34. The method of Claim 25, wherein said nascent protein detected is functionally active.

35. The method of Claim 25, wherein said tRNA molecule is an initiator tRNA molecule.

36. The method of Claim 25, wherein said tRNA molecule is a suppressor tRNA molecule.